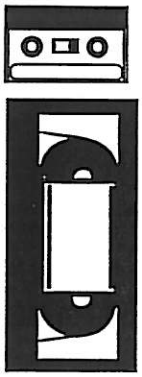
MACHINE READABLE RECORDS



Over the years, records have been produced in a variety of shapes, sizes, and types. Whether records are hand-copied ledger books or printed text, information can be read simply by looking at the text. Records on audio, video, and computer media present an important change in the way information is recorded and retrieved. Such records require equipment to read the information they hold. These records are referred to as ***machine readable.***

The information stored on a videotape or computer diskette must be retrieved by a machine specifically designed to read its particular format. ***The format encompasses both the physical media and the way the electronic signals are recorded on that media.*** VHS format videotapes require a video player designed to read the particular format of those VHS tapes. (For example, a video produced in England would not be playable on a standard video player purchased in the U.S.) Audiocassettes can only be played on a cassette player that accommodates the correct size audiotape that includes the correct number of tracks in the correct physical location.

Changes in technology can cause machine formats to become obsolete, preventing access to information even if the medium (*e.g.*, tape, diskette, CD) holding the information is in perfect condition. Machine readable records are also sensitive to their environment, making environmental controls a requirement. Machine readable records cannot be stored in an attic or basement and reclaimed after years of neglect.

Securing and maintaining machine readable records require planning and diligence beyond that traditionally applied to paper-based records.

INTELLECTUAL CONTROL

It is important to know what machine readable records you are storing. For audiotapes, include the record name, format type, playing speed, and the date that the copy was made in inventories and on storage containers or on the item itself. Also include any special signal processing that may have been used, such as "Dolby C" for noise reduction.

For computer tapes and diskettes, record and maintain information about the version of the

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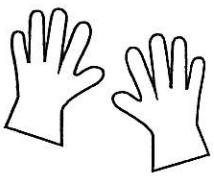
operating system and version number of the program or application used to create the record, as well as ownership and date of each record series. Be sure to mark media in the manner recommended by the manufacturer, *e.g.,* never use ballpoint pen for marking CD's.

Audiotape, videotape, and computer diskettes are sometimes called magnetic media, because information is recorded on magnetized particles. Because magnetic heads record the information, magnets can also erase it or make it hard to read. For this reason, do not expose these media to strong magnetic fields, *e.g.,* electric motors or audio speakers.

Dust, heat, and high relative humidity are the enemies of machine readable records. Dust scratches tape surfaces, obscuring information and clogging the magnetic heads used to read them. Heat may cause the plastic film of the tape to distort, changing the recorded pattern and scrambling information. Heat can also deform plastic parts inside a cassette, preventing the tape from moving from one reel to the other. High relative humidity can degrade the binder that holds the magnetic information particles on the tape and encourage mold to grow.

For these reasons, store machine readable records in an environment free from heat and dust. Ideal long-term storage conditions would be very cool and dry (50° F and 20% RH). While such conditions may not be realistic for your setting, do not let temperatures exceed 70° F, and if possible, keep the relative humidity below 40%. Make every effort to keep temperature and relative humidity levels constant.

CARE AND HANDLING

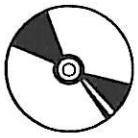


Avoid touching the surface of any tape or computer diskette. Oil from skin leaves a residue that can coat the equipment's playing head and attract dust. If you must handle tape, wear clean white cotton gloves. Never use commercial products advertised to clean tapes and diskettes. Contact an experienced professional to clean or repair dirty or damaged tapes.

Return tapes and diskettes to their individual boxes immediately after use to avoid possible damage and dust. Never use paper clips or adhesive tape to attach notes directly to cassettes, reels, or diskettes.

Always rewind tapes before storing. If a tape is only partially played, advance the tape to the end (using either regular speed or fast-forward) before rewinding it for storage.

Maintain machines according to manufacturer's specifications to ensure that equipment will not damage tapes.



Most compact disks or CD's are not magnetic media. However, CD's do require careful handling to ensure access to information that has been recorded on the bottom (printless) side of the disk. CD's have been advertised as almost indestructible. They are not. Scratches to the surface can distort the laser light that reads the disk, causing it to skip or repeat tracks. Remove dust with a soft cloth, wiping from the center out, as if along the spokes of a wheel. Return CD's to their cases immediately after use.

USE AND BACKUP COPIES

Backup copies are the best insurance for protecting valuable tapes. In the event of media aging or a natural disaster, a copy may be the only means available to retrieve information from a master that is no longer playable. To prevent the loss of information, create a "copy master" from the original tape. Use this copy master only when making another use copy.

Use reel to reel audio tape for master audio copies. A written transcript of an audio or video tape can also be used as a "use copy" or "backup copy." A transcript may contain every word on the original tape, or only a general rendering of the discussion.

The loss of a single computer diskette can mean the loss of a large quantity of information. For this reason, backup copies are critical to ensuring the preservation of computer-based records. If maintaining an active computer database of records is part of an institutional operation, copy the information recorded on the system's hard

drive onto backup diskettes or tapes on a daily basis. As a part of disaster prevention, store back-up copies in another secure location.

REFRESHING

Audio, video, and computer tapes designed to be maintained for long periods of time will require periodic copying to ensure access to information. Every three to five years, re-copy all master tapes onto high quality, polyester-based tape in the currently established format for the media.

MIGRATION

Information formats disappear as new technology emerges. Within the last twenty years, 8-track tapes, beta format video, 1/2" videotape, and countless other formats have become obsolete. Access to information is limited when machines necessary to read these records fail and cannot be replaced. To ensure access to information, copy older formats onto a stable technology while playback machines remain available.

Be knowledgeable about the formats of all machine readable records in your care.

RESOURCES AND PUBLICATIONS

Machine readable technologies provide versatile methods for recording and storing information beyond the capability of conventional paper-based records. However, machine readable records require a proactive response from their custodians to ensure the long-term preservation of information.

For more information on preserving machine readable records, phone 404-656-3554 to contact the Conservator at the Georgia Department of Archives and History, a division of the Office of Secretary of State.

OTHER RESOURCES

American National Standards Institute (ANSI).
ANSI/NAPM IT9.23-1996 Imaging Materials: Polyester Base Magnetic Tape: Storage.
New York: ANSI, 1996.
Telephone: 212-642-4900.

Kenney, Anne and Stephen Chapman.
Digital Imaging for Libraries and Archives.
Ithaca, NY: Cornell University, 1996.
This is an expanded version of a training manual used in digital imaging training at Cornell.

Lindner, Jim.
Digitization Reconsidered.
This and a number of other related publications are available at <http://www.panix.com/~Vidipax>, or from the author by phoning Vidipax at 212-982-5676. The Vidipax help line is 1-800-653-8434.

Van Bogart, John W.C.
Magnetic Tape Storage and Handling, A Guide for Libraries and Archives.
Washington, DC: The Commission on Preservation and Access and the National Media Laboratory, 1995.
Telephone: 202-939-3400. ■

[The Georgia Department of Archives and History wishes to thank Mr. Jim Lindner for his technical assistance in the preparation of this leaflet.]

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Elkington, Nancy E., editor.
Digital Imaging Technology for Preservation.
Mountain View, California: Research Libraries Group, Inc, 1994.
Telephone: 415-691-2200.

Lindner, Jim.
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MACHINE READABLE RECORDS

Other technical leaflets in this series:

- *Preservation Basics for Paper-Based Records*
- *The Storage Environment*
- *Disaster Preparedness*
- *Reformatting Records*
- *Selecting an Off-Site Records Facility.*

To request copies, please call 404-656-2374 to contact the Reference and Preservation Program of the Georgia Department of Archives and History, a Division of the Office of Secretary of State.

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